Development of the Natural Gasoline Industry

By D. E. BUCHANAN.

Truly "It's an ill wind that blows nobody good."

Little did such men as Andrew Fasenmeyer, William Richards, E. D. Leland, Sutton brothers & Edmonds and many others realize the immense proportions to which the business of extracting gasoline from natural gas would grow. The presence of gasoline in natural gas was first discovered in the early eighties. The above named men and many other operators of natural gas transportation lines, experienced a great deal of trouble with condensation in the lines. It was soon discovered that this condensate was gasoline and drips were installed in low places and sags along the lines to accumulate and permit the removal of the condensate. As there was practically no market for gasoline at that time the product was generally wasted, at least no commercial use was made of it. It soon became [illegible] to use it for boiler fuel on the leases, but the value of the product was no incentive for recovering it; it was simply a matter of eliminating an objectionable operating condition.

Becomes a Commercial Product.

It is recorded that in 1903 Sutton brothers & Edmonds of Sisterville, W. Va., first established the business of collecting this drip gasoline and marketing it. Of course, their facilities for extracting the gasoline were very crude. They used the gas line pressure, installed a few cooling coils and recovered, by this process, only the heavier gasoline fractions. The gravity was said to have been approximately seventy degrees, Be. This production was collected in wooden barrels and sold in the vicinity of Parkersburg, W. Va., for blending purposes. It is pleasing to note that the company which purchased this first drip gasoline has used natural gasoline in increasing quantities every year since that time and is today one of the largest users. This can surely be taken as a forceful testimony of its value and usefulness. Andrew Fasenmeyer was also among the first to commercialize the value of this product.

According to reliable authorities the first plant especially designed and constructed for extracting gasoline by the compression method was built by William Richards at Mayburg, Pa.

From the time it was discovered that gasoline would precipitate out of natural gas when subjected to pressure and low temperature until about 1907, it was generally thought that all natural gas contained gasoline in commercial quantities and quality and there were many plants of various designs constructed and considerable financial loss encountered before it was learned that only "wet" gas could be treated profitably.

These plants were generally built by producers who made provision to handle only such gas as was produced on their own leases, and it was not until some years later that gas was purchased for the purpose of gasoline extraction. As the business became better established and the market for the product was enlarged, the manufacturers commenced buying "wet" gas from adjoining leases. This was easily contracted on the basis of one-half of the per gallon gasoline selling price per thousand cubic feet, with no regard for gasoline content. Royalty owners usually received $5 to $10 per well, per year for their interest.

The industry grew steadily until in 1911 it became of sufficient importance to attract the attention of the United States geological survey, and it was for that year that the first production figures were recorded by that body.

As early as 1905 applications were filed for United States letters patent covering the extraction of gasoline from natural gas by the absorption method, and up to 1911 a great deal of experimental work was carried on by various operators. E. D. Leland is accredited with extracting gasoline from natural gas by this process, in connection with refrigeration, in 1901, which probably was the first gasoline so extracted. In 1913 a plant especially designed to operate under the absorption method was constructed at Hastings, W. V., and this was probably the first plant of its kind of any consequence.

Rapid Growth of the Industry.

The growth of the industry from 1911 to the present time has far exceeded any early expectation, the production today being equal to approximately 10 per cent of the total gasoline manufactured from petroleum and its products by all processes.

The accompanying table prepared from records of the United States geologocal survey, is of considerable interest, in that is sets forth clearly this growth in gallonage and value from year to year.

Year	Total production gallons	Total value
1911	7,425,839	$ 931,784
1912	12,081,179	1,157,476
1913	24,060,817	2,458,443
1914	42,652,632	3,104,969
1915	65,364,661	5,150,821
1916	103,492,689	14,331,148
1917	217,884,104	40,188,956
1918	282,535,550	39,383,615
1919	351,535,026	64,196,763
1920	384,741,532	71,634,118
1921	473,658,690	65,717,900
Total	1,965,434,942	$318,736,775

To the total of 1,965,434,942 gallons, representing the production from 1911 to 1912 inclusive, it is safe to add an average daily production of 1,750,000 gallons for 1922 or a total for the year of 638,750,000 which will bring the total production to 2,604,184,942 gallons. To the value of the product up to and including 1921, it is conservative to add $59,425,000, representing the value of the production for the current year, estimated at 14 cents per gallon, which will bring the total value of the product to $409,060,775. The average prices per year are interesting especially when considered in connection with the average Chicago tank wagon market as graphically shown on the following page.

Absorption Gains Favor.

After the discovery that gasoline could be extracted profitably by the compression method from "wet" gas only and on account of the development of the compression process being more rapid than absorption, only wet gas of high gasoline content was sought by gasoline manufacturers.

As absorption methods were improved and perfected the product made by this process gained favor with the trade, on account of the lower volatility and the ease with which the product could be handled for blending as compared with the compression product. Up to two or three years ago all authorities held that the absorption process could not be profitably operated on wet gas and especially wet gas of high gasoline content. Extensive experiments and research work was conducted by some of the larger manufacturers have disproven this theory and a number of the largest gasoline plants in the country have already been changed over to the absorption process, many of them operating compressors in connection with such plants to recover the light vapors.

The absorption process is steadily gaining in favor with manufacturers as is the product manufactured thereby still gaining in favor with purchases. It is here predicted that in the future the straight compression plant will be the exception, regardless of gasoline content, whereas, not so long ago, it was the rule.

Mid-Continent Takes Lead.

In 1907 the first gasoline plant to be erected in the Mid-Continent was built in the Glenpool field, but it was not until 1910-11 that the industry became of any consequence in that district. It is in Mid-Continent field that it has experienced its greatest growth, there being manufactured today in Oklahoma, Kansas, Louisiana and Texas approximatel 70 per cent of the total production.

During 1921 it was estimated that the production in California was only 13.5 per cent of the total but many plants, some of them quite large, are now being constructed in southern California, and it is safe to assume that the production of natural gasoline in that state will be greatly increased within the next year.

The growth of the industry in Texas has been phenomenal in the past two years and the prediction is freely made that in another year, Texas will lead all states in this respect, if it is not now leading them. As an example of the strides being made in this direction, it is interesting to note that one company has increased its gross production from 10,000 gallons per day two years ago to 135,000 gallons per day in Texas alone.

From the crude, inefficient plant of the early days, capable of extracting only a small percentage of the gasoline content, we have the modern plants, both compsession and absorption, designed and constructed on scientific principles, many of them monuments to the development of the science of which the industry may be justly proud.

The early plants was operated merely as a side line whereas the plant of today is operated by men especially trained in this particular branch of the industry, their knowledge being evidenced by the recovery of 95 to 100 per cent of the gasoline content of the gas.

The activities of manufacturers have not been directed solely to increase in yield. Great strides have been made in the production of a product used more easily and to better advantage in refinery operations. To meet a demand among refiners for a product that could be used in export gasoline, some of the manufacturers have perfected treating facilities which enable them to market natural gasoline passing in the doctor test. The demand for this product is steadily increasing.

Industry Overcomes Adversities.

While the figures above presented show phenomenal growth, it must not be assumed that the present substantial position which this product holds in the petroleum industry was attained without trials or tribulations. During the early days of the development in Oklahoma, particularly in 1910-11, it was at times necessary for the manufacturers (except those who had been successful in contracting for the sale of their product) to draw their daily production from stock tanks to earthen dykes and burn it. There was practically no market for the product but those who were pioneering the industry had the foresight to recognize the possibilities for the future. They sustained losses in all directions in order to retain their gas contracts which were later to prove of great value.

During this time some of them were building new plants while they were burning the production of the plants they had in operation.

From the condition above recited, the pendulum swung to a period of active demand and the product was readily sold from that time to 1920 at prices which well repaid those who has suffered these losses.

Exit Inferior Blends.

From 1912 to 1919 practically all the natural gasoline manufactured in the Mid-Continent field was blended with low-grade distillates, gas, oil and fuel oil, and found a ready market among large buyers.

During the years 1918, 1919 and 1920, on account of the high wholesale gasoline prices f. o. b. refinery, and relatively low tank wagon markets, many jobbers throughout the country attempted to market kerosene blend. This blend was manufactured at a less cost than straight run gasoline, and consequently sold to them at prices enabling to net more profit than could be realized from handling better grades. As might have been expected this blended product did not prove satisfactory as a motor fuel and, in the summer of 1920, it grew into such disfavor that its manufacture was stopped.

With the passing of kerosene naphtha blend—a combination of natural gasoline and naphtha—came into greater prominence as motor fuel. As the market for naphtha blend was enlarged, manufacturers with no experience in making that sort of blend, entered the market, and in a short while naphtha blend grew into general disfavor on account of the inferior quality of some of it. This inferior quality was in some cases due to the inexperience of of the manufacturer and in other cases due to the inferiority of the naphtha as well as the highly volatile natural gasoline used.

Up to this time the refiner using unblended natural gasoline in his operations was the exception. Many of them, from one cause or another, were bitterly opposed to the product. The refiner who did use it met with many obstacles in the sale of his product on account of the propaganda circulated by those who considered it detrimental to motor fuel, dangerous to handle, etc. Their dislike for the product was in many cases justified as there was no standard of quality or uniformity in the products sold by different gasoline manufacturers. With a few exceptions it was of such high gravity and so votatile that the refiners' facilities did not enable them to handle it profitably or even properly.

Coincident with this growing tendency to discontinue the general depression in the oil business in fact, in all lines of business. This natural gasoline industry had at no time in the past been on a sound substantial foundation and consequently was in no position to receive the shock. True, many companies had realized handsome returns on their investments, in fact, the returns had been so great that manufacturing costs had not been kept within due bounds.

Prior to this time almost all of the early gas contracts had expired and been renewed on a basis of which, when added to the high operating costs, left no profit to the manufa-

CONTINUED ON PAGE EIGHTEEN